Feed the Future Country Fact Sheet

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Revolutionizing a Critical Crop for Millions in Africa

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A research station in Ethiopia, where a number of sorghum test plots are run.

Each year, millions of famers across Africa plant sorghum, a vital staple for household food consumption, livestock fodder and building materials such as thatch, fencing, basketry and shelter. Yet due to the harsh climate in semi-arid regions, only a fraction of the sorghum crop typically survives, leaving smallholder farmers with less food, fewer resources and minimal incomes.

The Feed the Future Innovation Lab for Sorghum and Millet at Kansas State University is experimenting with ways to improve the resilience and heat-tolerance of sorghum in difficult growing conditions.

Led by Gebisa Ejeta and Tesfaye Mengiste, both of Purdue University, and Tesfaye Tesso, of Kansas State University, the research project seeks to identify the genetic traits in sorghum that could lead to more stress-tolerant plants and higher crop yields.

In 2014, the research team planted more than 2,000 different sorghum lines in test plots across Ethiopia. Perhaps the largest screening of sorghum lines in Ethiopia, the test plots represent the broad range of climatic and environmental stressors in the target growth area. In addition, through partnerships with the Ethiopian Institute of Biological Diversity and the Ethiopian Institute for Agricultural Research, the team has gained access to the numerous locally adapted varieties. This provides the researchers with an opportunity to study a rich and diverse source of genetic material that is not part of the U.S. germplasm collection.

The Feed the Future research team screens the planted germplasm for such characteristics as grain quality, drought tolerance, disease resistance and resistance to Striga, a parasitic weed. The researchers will then compare each plant's expressed characteristics with its DNA, a process that will locate specific genes linked to favorable traits in plant resistance and grain quality.

According to Tesso, this project may result in monumental improvements in the lives of farmers who depend on sorghum production. With a more resilient and stress-tolerant sorghum, growers can look forward to healthier crops, higher yields and increased income. Higher quality sorghum would also provide a more protein-rich source of food and animal feed, leading to better nutrition and health for farmers and their livestock.

“The improvement in protein availability may also have significant impacts on the sorghum industry globally,” Tesso said. “It can increase feed value where the crop is primarily used as animal feed and, through reducing protein malnutrition, it can also significantly contribute to improved health of communities where sorghum serves as a staple.”

A future where this essential crop can withstand the challenges of an arid climate is within reach thanks to research and development into new climate-smart sorghum breeds.